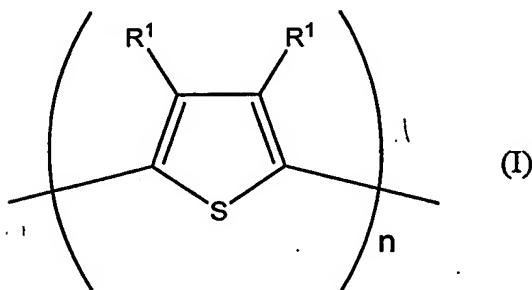


CLAIMS

What is claimed is:

1. An aqueous composition comprising at least one doped conductive polymer, at least one co-solvent, and at least one metal cation selected from Group 1 metals, Group 2 metals, or mixtures thereof.
- 5 2. A composition according to Claim 1, wherein the conductive polymer is selected from polythiophenes, polypyrroles, polyanilines, or combinations thereof.
- 10 3. A composition according to Claim 2, wherein the polythiophene comprises Formula I:

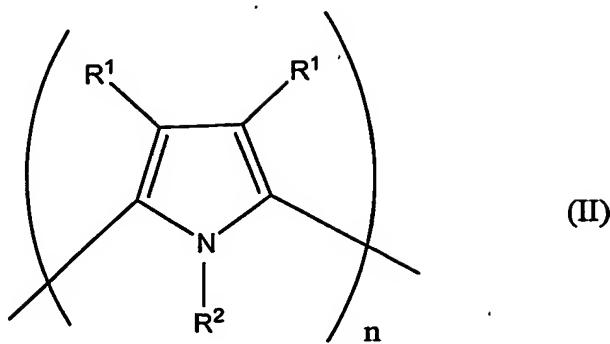


wherein:

15 R¹ is independently selected so as to be the same or different at each occurrence and is selected from hydrogen, alkyl, alkenyl, alkoxy, alkanoyl, alkythio, aryloxy, alkylthioalkyl, alkylaryl, arylalkyl, amino, alkylamino, dialkylamino, aryl, alkylsulfinyl, alkoxyalkyl, alkylsulfonyl, arylthio, arylsulfinyl, alkoxy carbonyl, arylsulfonyl, acrylic acid, phosphoric acid, phosphonic acid, halogen, nitro, cyano, hydroxyl, epoxy, silane, siloxane, alcohol, benzyl, carboxylate, ether, ether carboxylate, ether sulfonate, and urethane; or both R¹ groups together may form an alkylene or alkenylene chain completing a 3, 4, 5, 6, or 7-membered aromatic or alicyclic ring, which ring may optionally include one or more divalent nitrogen, sulfur or oxygen atoms, and

20 n is at least about 4.

25 4. A composition according to Claim 2, wherein the polypyrrole comprises Formula II:



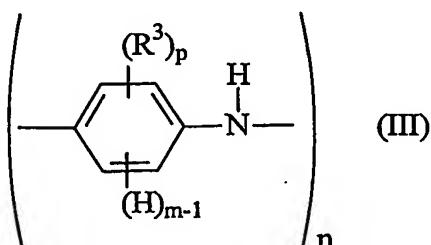
wherein:

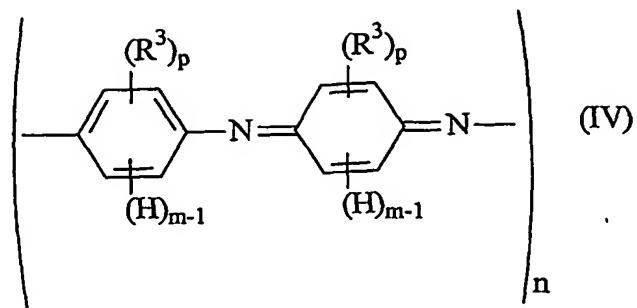
n is at least about 4;

5 R¹ is independently selected so as to be the same or different at each occurrence and is selected from hydrogen, alkyl, alkenyl, alkoxy, alkanoyl, alkythio, aryloxy, alkylthioalkyl, alkylaryl, arylalkyl, amino, alkylamino, dialkylamino, aryl, alkylsulfinyl, alkoxyalkyl, alkylsulfonyl, arylthio, arylsulfinyl, alkoxycarbonyl, arylsulfonyl, acrylic acid, phosphoric acid, phosphonic acid, halogen, nitro, cyano, hydroxyl, epoxy, silane, siloxane, alcohol, benzyl, carboxylate, ether, ether carboxylate, ether sulfonate, and urethane; or both R¹ groups together may form an alkylene or alkenylene chain completing a 3, 4, 5, 6, or 7-membered aromatic or alicyclic ring, which ring may optionally include one or more divalent nitrogen, sulfur or oxygen atoms; and

10 R² is independently selected so as to be the same or different at each occurrence and is selected from hydrogen, alkyl, alkenyl, aryl, alkanoyl, alkylthioalkyl, alkylaryl, arylalkyl, amino, epoxy, silane, siloxane, alcohol, benzyl, carboxylate, ether, ether carboxylate, ether sulfonate, and urethane.

15 5. A composition according to Claim 2, wherein the polyaniline comprises Formula III or Formula IV:





5 wherein:

n is at least about 4;

p is an integer from 0 to 4;

m is an integer from 1 to 5, with the proviso that p + m = 5; and

R³ is independently selected so as to be the same or different at each occurrence and is selected from alkyl, alkenyl, alkoxy,

10 cycloalkyl, cycloalkenyl, alkanoyl, alkythio, aryloxy, alkylthioalkyl, alkylaryl, arylalkyl, amino, alkylamino, dialkylamino, aryl, alkylsulfinyl, alkoxyalkyl, alkylsulfonyl, arylthio, arylsulfinyl, alkoxy carbonyl, arylsulfonyl, carboxylic acid, halogen, cyano, or alkyl substituted with one or more of sulfonic acid, carboxylic acid, halo, nitro, cyano or epoxy moieties; or any two R³ groups together may form an alkylene or alkenylene chain completing a 3, 4, 5, 6, or 7-membered aromatic or alicyclic ring, which ring may optionally include one or more divalent nitrogen, sulfur or oxygen atoms.

20 6. A composition according to Claim 1, wherein the conductive polymer comprises poly(3,4-ethylenedioxythiophene).

25 7. A composition according to Claim 1, wherein the co-solvent is selected from ethers, cyclic ethers, alcohols, alcohol ethers, ketones, nitriles, sulfides, sulfoxides, amides, amines, carboxylic acids, or combinations thereof.

30 8. A composition according to Claim 1, wherein the co-solvent is selected from an alcohol, an alcohol ether, or combinations thereof.

35 9. A composition according to Claim 8, wherein the co-solvent is selected from normal propyl alcohol, 1-methoxy-2-propanol, or combinations thereof.

10. A composition according to Claim 1, wherein the co-solvent is present in an amount from about 5% to about 60% by weight based on the total weight of liquid.
11. A composition according to Claim 1, wherein the co-solvent is 5 present in an amount from about 10% to about 30% by weight based on the total weight of liquid.
12. A composition according to Claim 1, wherein the metal cation is selected from Na^+ , K^+ , Cs^+ Mg^{+2} , or combinations thereof.
13. A composition according to Claim 12, wherein at least a portion 10 of the metal cation is present as a salt with an anion selected from hydroxide, or carbonate.
14. A composition according to Claim 1, wherein the metal cation is present in a concentration greater than about 0.4 mmol per gram of doped conductive polymer.
15. A composition according to Claim 1, wherein the metal cation is present in a concentration between about 0.5 and 3 mmol per gram of doped conductive polymer.
16. A composition according to Claim 1, wherein the metal cation is 20 present in a concentration between about 0.6 and 2 mmol per gram of doped conductive polymer.
17. A buffer layer made from a composition according to Claim 1.
18. An electronic device comprising a buffer layer made from a composition according to Claim 1.
19. A device of Claim 18, wherein the device is selected from a 25 device that converts electrical energy into radiation, a device that detects signals through electronics processes, devices that convert radiation into electrical energy, or a device that includes at least one semi-conductor layer.